

REMARKS

Claims 1-18 are pending in the application. Claim 1 is amended to clarify the present invention, and to further recite “wherein the container is constructed to have a flat thin-shaped section” and “the reflux flow passage is formed from the condensing part to the evaporating part in the container”.

Entry of the Amendment and reconsideration and review of the claims on the merits are respectfully requested.

Formal Matters

Applicants appreciate that the Examiner has acknowledged the claim for foreign priority and the receipt of the priority document. Applicants also appreciate that the Examiner has reviewed and considered the references cited in the Information Disclosure Statement filed February 13, 2004, and that the Examiner has approved the formal drawings filed February 13, 2004.

Claim Rejections - 35 U.S.C. § 102

Claims 1-18 are rejected under 35 U.S.C. § 102(b) as assertedly being anticipated by Eastman (U.S. 4,274,479), for the reasons of record.

Applicants respond as follows.

As previously discussed, Claim 1 is amended to clarify the present invention, and to further recite “wherein the container is constructed to have a flat thin-shaped section” and “the

reflux flow passage is formed from the condensing part to the evaporating part in the container''. Thus, the present invention as amended clarifies a flat thin-shaped heat pipe type having a direct reflux flow passage. The direct reflux flow passage is beneficial in order to avoid blockage of a vapor flow passage by a working fluid in a condensed part.

Applicants' describe that in the prior art, a technical problem exists when an amount of the liquid phase working fluid is not always sufficient. Accordingly, if the inputted amount of heat from outside increases suddenly and drastically, for example, there will be a possibility of so-called drying out such that the wick goes into a dry state due to a shortage of the liquid phase working fluid fed to the portion where the evaporation of the working fluid takes place (page 4, lines 3-11). However, according to the heat pipe of the present invention, Applicants describe that flow of the condensable, liquid phase working fluid toward the evaporating part takes place not only in the cavity of the porous body but also in the direct reflux flow passage in the porous body, and the flow cross-sectional area of the direct reflux flow passage is large, and the flow resistance is small in comparison with that of the porous body. Accordingly, the reflux of the liquid phase working fluid to the evaporating part is promoted and the amount of the evaporation of the working fluid at the evaporating part is increased, thereby increasing the heat transport of the heat pipe as a whole. Also, since the direct reflux flow passage functions as a reservoir portion for reserving the liquid phase working fluid, the amount of the working fluid contained in the evaporating part or in its vicinity is increased. As a result, shortage of condensable, liquid phase working fluid will not occur even when the inputted amount of heat is increased, and drying out is thereby prevented or suppressed in advance. (see bridging paragraph of pages 5-6).

In other words, since the direct reflux flow passage extends to an evaporating part, the working fluid can be reserved therein and the reserved amount increases more than that of a porous body. Consequently, so-called “drying out” or “dryout” can be prevented when the heat pipe of the present invention starts to operate or when the input heat is abruptly increased.

On the other hand, the flat thin-shaped section of the presently claimed heat pipe, for example, is not disclosed in Eastman. Eastman specifically discloses a circular heat pipe (see Eastman, Figs. 1-8), which assures effective “circumferential distribution” of liquid in Eastman’s heat pipe (see Abstract). Thus, Eastman fails to anticipate each and every element of the present claims. The dependent Claims 2-17 are not anticipated for at least the same reasons as given above.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b).

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111

U.S. Application No. 10/777,061

Q78664

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



John K. Shin

Registration No. 48,409

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: November 10, 2004